REMARKS

Review and reconsideration on the merits are requested.

Claims 1, 4 and 8 were rejected under 35 U.S.C. § 112, second paragraph.

In response, claim 1 as amended herein clearly recites that the plurality of the thermoplastic resin and/or the elastomers are incompatible with each other. Furthermore, the expressions "is composed of" and "form a multilayer distributed structure", considered by the Examiner to be indefinite, have been deleted. Also, the various expressions in claims 4 and 12 considered by the Examiner to be indefinite have also been deleted.

Applicants further comment on the language "as measured by a laser scattering method" as follows.

The language "as measured by a laser scattering method" simply states the technique of measuring the particle diameters, which principle of measurement is well recognized by those of ordinary skill.

Particularly, the laser scattering method described in claim 1 is such that when particles to be measured are irradiated with a laser beam, a pattern of light intensity profile of diffracted/scattered light is spatially produced. The pattern of light intensity profile varies depending upon the size of the particles. Upon detecting the pattern of light intensity profile using an optical sensor, the sizes of the particles can be measured.

Samples actually measured are composed of a plurality of particles of different sizes mixed together. Therefore, the pattern of light intensity profile produced by the group of particles is a superposition of patterns of light intensity profiles produced by the individual

particles. The laser scattering method measures the ratio of particle size profiles, i.e., the ratio of particles are different sizes from the superposition of patterns of the light intensity profiles.

It is respectfully submitted that the claims as amended herein fully comply with 35 U.S.C. § 112, and withdrawal of the foregoing rejections is respectfully requested.

Claims 1, 4, 6, 10 and 13-15 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 5,542,557 to Koyama et al.

Applicants respectfully traverse for the following reasons.

I. Concerning claim 1.

The Examiner considered that Koyama et al teaches:

① a thermoplastic resin composition containing an oxygen absorbing agent;

② a blend of two resins which are incompatible with each other;

③ one resin is a propylene polymer and the other resin is an ethylene polymer;

④ the oxygen absorbing agent comprises oxygen absorbing agent particles comprising a reducing iron powder and a layer of an oxidation promoter which sticks to the surfaces of the powder; and

⑤ the particles have an average diameter of less than 50 μm;

but does not teach:

⑥ particles having an aspect ratio of 0.6 and a compression degree of at least 20% (as claimed in new claim 16).

As for ②, however, Koyama et al (column 10, lines 55-62) merely describes that a hydrophilic substance which is a promoter is dispersed in a resin, which is irrelevant to ② above.

As for ③, further, Koyama et al (column 8, lines 18-39) relied upon for the propylene polymer simply describes a resin used for a sealing portion without containing the oxygen absorbing agent. Further, portions (column 10, line 63-67, column 11, lines 1-2) relied upon by the Examiner relating to the ethylene polymer simply describe polyethylene oxide modified products as hydrophilic substances which are the promoters, but do not describe resins that can be used as a resin matrix.

Koyama et al exemplifies olefin resins such as polyethylene and polypropylene (column 12, lines 53-67) as resins to be blended with additives such as oxygen absorbing agent and the like. However, Koyama et al does not at all describe or suggest the use of a plurality of resins which are blended together being selected so as to be incompatible with one another. That is, according to Koyama et al, the oxygen absorbing agent is only one of the additives that can be blended, and does not recognize the idea of selecting a particular resin when the oxygen absorbing agent is to be blended.

The Examiner further states that the aspect ratio and the compression ratio can be easily specified as described in ⑤ above. However, the aspect ratio and the compression degree are never exclusively derived from the average particle diameter. For example, as discussed at page 5 of the Amendment Under 37 C.F.R. § 1.111 filed June 28, 2002 with respect to the rejection over U.S. Patent 5,908,676 to Otaki et al, in Comparative Example 7-1 described at page 46 of the specification, the reducing iron powder described therein had particle diameter of 40 μm but an aspect ratio in which more than 60% of the particles exhibited an apparent aspect ratio of not

smaller than 0.6. That is, average particle diameter says nothing about aspect ratio or compression degree.

A feature of the resin composition of the present invention resides in the use of the resin matrix of resins that are incompatible with each other in combination with an oxygen absorbing agent of a particular shape. It is never easy to select the oxygen absorbing agent of a flat or spindle-like shape from the description related to an average particle diameter only of Koyama et al which does not describe use of the above-mentioned compounds in combination.

That is, the oxygen absorbing agent particles swell upon the oxygen-absorbing reaction. In the case of a resin matrix of a single resin or a resin matrix of a plurality of resins which are compatible with each other, therefore, cracks occur in the resin matrix and rust elutes onto the surfaces. In order to solve the above problems according to the present invention, the oxygen absorbing particles of a flat or spindle-like shape are selected to suppress the amount of swelling in the direction of thickness while a plurality of resins incompatible with each other are blended together to obtain a resin matrix such that one resin is dispersed in the other resin, relaxing the stress produced by the expansion of the oxygen absorbing agent particles among the resins. The above action and effect of the present invention can be obtained only by using a particular resin matrix in combination of the oxygen absorbing agent particles of a flat or spindle-like shape, which, however, has not at all been recognized by Koyama et al.

II. Claims 4, 6, 10 and 13-15.

Claims 4, 6, 10 and 13-15 depend upon claim 1, and therefore are patentable for the same reasons that claim 1 is patentable over the cited prior art. Applicants further comment on separate patentability of claims 4 and 10 as follows.

Concerning claim 4, the Examiner cited col. 11, lines 25-26 as describing that "the ethylene polymer is present in the blend at greater than 1% by weight". However, this passage simply specifies the amount of the hydrophilic substances as a promoter, and has no bearing on patentability of claim 4.

As for claim 10, the effect of dry milling is seen from Example 7 and Comparative Example 7-1 in the present specification.

Namely, in the wet type, the surfaces of the iron powder tend to be oxidized or swollen due to the presence of moisture and, hence, the properties and the shape thereof are subject to be changed, making it difficult to obtain a homogeneous oxygen absorbing agent. The present invention, however, does not exclude oxygen absorbing agents of the wet type. The oxygen absorbing agent for use in the present invention can also be obtained even by the wet type method. In the present invention, however, the dry milling is preferred. There is nothing in the prior art which teaches the desirability and hence unobviousness of dry milling.

For the above reasons, it is respectfully submitted that claims 1, 4, 6, 10 and 13-15 are patentable over Koyama et al, and withdrawal of the foregoing rejection under 35 U.S.C. § 103(a) is respectfully requested.

Claims 8 and 11-12 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Koyama et al in view of Japanese Patent No. 59085804.

The Examiner considered that Koyama et al does not disclose an absorbing agent having a specific surface area of at least 0.5 square meters per gram and an apparent density of not larger than 2.2 grams per cubic centimeter, but relied on Japanese Patent No. 59085804 as teaching iron oxide for chemical reduction having an apparent density of 2.2 grams per cubic centimeter.

Applicants respectfully traverse for the following reasons.

The apparent density according to Japanese Patent No. 59085804 is that of the iron oxide whereas the apparent density specified in the present invention is that of the oxygen absorbing agent which comprises oxygen absorbing agent particles of a reducing iron powder and a layer of an oxidation promoter or a catalyst which sticks to the surfaces of the reducing iron powder. It is therefore clear that quite different values are exhibited by the two.

In the present invention, the promoter and the catalyst are adhered onto the surfaces of the reducing iron powder, and the apparent density is not the same as that possessed by the reducing iron powder itself. The present invention could never have been easily arrived at even though the value of apparent density of the ion oxide might have been described.

The Examiner further considered that Japanese Patent No. 59085804 teaches that the apparent density is better small and the specific surface area is better large and, hence, one of ordinary skill could have easily arrived at the specific surface area. However, there is no rule that if ether the surface area or the apparent density is determined, then, the other one is

inevitably determined. In fact, however, there exists a variety of probabilities, and it is never easy to select an optimum from among these parameters.

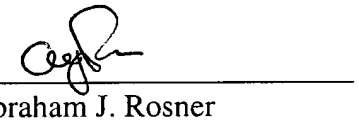
That is, reducing iron powders exist having various densities, and the relationship between surface area and apparent density cannot be determined exclusively.

For the above reasons, it is respectfully submitted that claims 8 and 11-12 are patentable over Koyama et al in view of Japanese Patent No. 59085804, and withdrawal of the foregoing rejection under 35 U.S.C. § 103(a) is respectfully requested.

Withdrawal of all rejections and allowance of claims 1, 4, 6, 8 and 10-16 is earnestly solicited.

In the event that the Examiner believes that it may be helpful to advance the prosecution of this application, the Examiner is invited to contact the undersigned at the local Washington, D.C. telephone number indicated below.

Respectfully submitted,



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APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

The claims are amended as follows:

1. (Four times amended) [A thermoplastic resin composition containing an oxygen absorbing agent, wherein a resin matrix of the thermoplastic resin composition is substantially non-compatible and is composed of a blend of a plurality of thermoplastic resins and/or elastomers, one of the non-compatible thermoplastic resins and/or elastomer being a propylene polymer, and the other being an ethylene polymer, and the thermoplastic resins and/or elastomers form a multilayer distributed structure in the resin matrix, the oxygen absorbing agent comprises oxygen absorbing agent particles composed of a reducing iron powder and a layer of an oxidation promoter or a catalyst which sticks to the surface of the reducing iron powder, and the oxygen absorbing agent particle has an average particle diameter of 10 to 50 μm as measured by a laser scattering method and an aspect ratio (short axis size/long axis size) of 0.6 or below being present in an amount of at least 50% and is a flat or spindle-shaped particle having a compression degree of at least 20%.] A thermoplastic resin composition comprising a blend of a plurality of thermoplastic resins and/or elastomers, and oxygen absorbing agent particles dispersed in the thermoplastic resins and/or the elastomers, wherein:

the plurality of the thermoplastic resins and/or the elastomers are incompatible with each other; and

the oxygen absorbing agent particles comprise a reducing iron powder and a layer of an oxidation promoter or a catalyst which sticks to the surfaces of the reducing iron powder, the

oxygen absorbent agent particles having an average particle diameter of 10 to 50 μm as measured by a laser scattering method, and having a flat or spindle-like shape.

4. (Amended) [An oxygen-absorbing resin composition according to claim 1 wherein the blend is composed of (A) a propylene-type polymer and (B) an ethylene-type polymer at a A:B weight ratio of 100:1 to 1:1.] An oxygen-absorbing resin composition according to claim 1, wherein either the incompatible thermoplastic resins and/or the elastomers are propylene polymers (A) and the other ones are ethylene polymers (B), the blend thereof having a weight ration (A:B) of from 100:1 to 1:1.

8. (Twice amended) [An oxygen-absorbing resin composition according to claim 1 wherein the oxygen absorbing agent is oxygen absorbing agent particles having the oxidation promoter or the catalyst which is present in an amount of 0.1 to 5% by weight based on the reducing iron powder, and has a specific surface area of at least 0.5 m^2/g and an apparent density or not larger than 2.2 g/cc.] An oxygen-absorbing resin composition according to claim 1, wherein the oxygen absorbing agent particles have the oxidation promoter or the catalyst which is present in an amount of 0.1 to 5% by weight of the reducing iron powder, and have a specific surface area of at least 0.5 m^2/g and an apparent density of not larger than 2.2 g/cc.

Claim 16 is added as new claims.